

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Ultra-Violet Rays- Regular (summative)**

**Type your 7-sentence background paragraph (use the answers to your research questions) and staple it to the front of this lab.**

**Problem: to find the effect of UV rays on a UV bead  
  
Lab Proposal: Read the materials and procedure to help you complete 1-6.**

1. **IV:** (\_\_\_/2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Levels:** (\_\_\_/1)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. **DV:** (\_\_\_/2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Constants**: (\_\_\_/2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
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2. **Purpose:** (\_\_\_/2)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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3. **Hypothesis:** (\_\_\_/4)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  
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**Now follow the procedure and complete 7-9.**

**7. Data Table:** (\_\_\_/6)

Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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**Materials:**

* 3 UV beads
* a place with direct rays
* 2 places with indirect rays
* Timer or watch

**Procedure**:

1. Put the bead in a place directly in the sun

2. Wait 1 minute then record the strength of any color change   
 (1 – no change, 2 – a little change, 3 – some change, 4 – a lot of change).

3. Remove the bead from the sun and allow it to turn white again.  
 4. Repeat steps 1-3 twice more.

5. Put the bead inside of the house near a window where it will get indirect sun

6. Repeat step 2

7. Remove the bead from the indirect sun and allow it to turn white again.

8. Repeat steps 5-7 twice more.

9. Put the bead inside of a car window where it will get indirect sun

10. Repeat step 2

11. Remove the bead from the indirect sun and allow it to turn white again.

12. Repeat steps 8-11 twice more.

**8. Graph:** (averages only)

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**9. Conclusion** (complete sentences)

1. What was the purpose of this experiment? (\_\_\_/1)

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1. Summarize the results for each IV level. (Include the averages and ranges. Write in full sentences.) (\_\_\_/3)

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If the ranges were large, answer questions 3 and 4. If they were small, answer question 5 and 6.

1. If any of your ranges were large, give possible reasons for any errors that occurred. (\_\_\_/2)

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1. How did these errors affect the average for that level of IV? (\_\_\_/2)

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1. If all of the ranges were small, what advice could be given to students with bigger ranges? (\_\_\_/2)

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1. Why would this advice make the ranges smaller? (\_\_\_/2)

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1. Use the averages to explain whether the hypothesis was supported or refuted. USE NUMBERS! (\_\_\_/2)  
   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. If one change could be made to one part of the experiment to make it better, what would the change be?  
   NOTE: Do NOT use “increase number of trials” or “add levels of IV”! (\_\_\_/1)

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1. What effect would your change have on the averages? (\_\_\_/1)  
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2. Who in the real world would be interested in the results of this experiment? (\_\_\_/1)

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1. Why would the results of this experiment be important to them? (\_\_\_/1)

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